N° II.

IMPROVED MANGLE.

The SILVER VULCAN MEDAL *and* TEN GUINEAS *were this Session presented to Mr.* ELISHA PECHEY, *of Bury St. Edmund's, for an* IMPROVED MANGLE, *a Model of which is placed in the Society's Repository.*

THE novelty in Mr. Pechey's mangle is the contrivance for obtaining the alternate forward and backward motion of the box, and consequently of the rollers, by continually turning the winch in the same direction. More than one mode of obtaining this object is already before the Society, but the simplicity, ingenuity, and perfect efficacy of the arrangement adopted by Mr. Pechey for this purpose, will be apparent from the following description :—

Plate IX, Fig. 1, is a plan or view of the upper side of the mangle.

Fig. 2 is an end view.

Fig. 3 is a side view; the bottom parts of the frame being represented as broken off, so as to reduce it within the plate; but the whole height is seen in fig. 2.

The same letters of reference apply to the same parts in each figure.

Fig. 4 is a section of a double rack, *a a* and *b b*, together with the plummer blocks, or guides, *c c* (which support and

guide the rack, or axis, *d d)*, being cut by a plane in the direction of, and perpendicular to the axis.

Fig. 5 is a similar section, shewing the rack in another situation, as will be hereafter described.

Fig. 6 is a view of part of the shaft *d d*, showing the two journals *e e*, which turn and are supported in the plummer blocks, and also the pinion *f* of three teeth, formed in the middle part of the shaft which works into the racks.

Fig. 7 is a section of the plummer block, cut in the direction of the dotted line *g g*, fig. 4, and of the pinion *f*, together with a side view of one end of the racks *a a* and *b b*.

Figs. 4, 5, 6, and 7 are drawn double the size of the former.

A A &c. is the frame of the mangle, B B the moveable box which contains heavy weights, and C C two rollers, which are all made in a similar way to other mangles.

On the upper side of the frame A A, &c. are fixed head stocks D D, which are fixed and kept perpendicular to each other by an iron bar *h h;* on the upper side of the bar are fixed the plummer blocks *c c;* the upper and lower parts of the plummer blocks have projecting pieces, *i i* and *j j*, which support and guide the double rack, see figs. 4 and 5. *a a* and *b b* is the double rack, which is fixed parallel to the box B B, by means of two perpendicular studs, *k k*; the studs pass loosely through loops in each end of the racks, so that the rack is at liberty to move up and down, being at the same time prevented from sliding off by the pins *l l;* each end of the rack is supported by two spiral springs *m m* fixed on the upper side of the box; the ends of these springs pass through small holes in the ends of the rack, and tend to support it in a middle situation, such a position as that the pinion *f*, fig. 7, shall be in gear with the upper bar of the rack. The double rack consists of a flat bar of iron, having teeth formed

in the internal part of it (as shown in figs. 3 and 7), and also two fins, or ribs, *n* and *o*, fixed to the upper and lower edges of it, and projecting on each side of the rack. The use of these fins is to support the rack in the two situations, as shown in figs. 4 and 5. *d d* is a shaft, or axis, which is supported by the head stocks D D, and by the plummer blocks *c c*, having a fly-wheel *p* fixed to one end of it, and a winch *q* to the other, by which means the machine is put in motion: in the middle part of the shaft *d d* is the pinion *f*, which works in the teeth of the rack; in figs. 3 and 7 the pinion is represented working in the upper rack *a a*; now, suppose a rotatory motion be given to the winch, the pinion will cause the rack, together with the box, &c. to move in a longitudinal direction till the end of the rack has arrived at the pinion, when it will be seen, by referring to fig. 7, that the rack cannot pass any further in that direction. By continuing to turn the winch in the same direction as at first, it is evident that the next tooth of the pinion will take into the gap in the end of the rack, and thus cause the rack to slide up the stud *k*, till the fins on each side of the rack are raised above the projecting pieces *i i* and *j j* of the plummer blocks: the next succeeding tooth will act in the first gap of the lower rack *b b*, which will cause the rack, together with the box, &c. to move in the contrary direction till the other end of the rack has arrived at the pinion, when a tooth of the pinion will act in the gap in that end and cause the rack to slide down the stud *k*, when the next tooth of the pinion will act in the first gap of the upper rack and cause the rack to move in the direction first mentioned, and, by continuing the motion of the winch in the same direction, an alternate motion of the rack box, &c. is effected.

To replace or change the rollers C C, one of the arms *r* or

s must be turned on the joint by which it is fastened to the plummer-block in a direction parallel to the side of the rack, as shown at *r* in fig. 1.

The arm forms an inclined plane as shown at *r*, fig. 3, so that when the end of the box B B approaches towards the center of the frame, the friction-roller *t* (one of which is fixed to each end of the box), passes up the arm or inclined plane *r*, and raises the end of the box, so that the roller C may be removed.

N° III.

CENTRIFUGAL CHECK-HOOKS.

The SILVER VULCAN MEDAL *was this Session given to* ED. SPEER, *Esq. of New Inn, for his* CENTRIFUGAL CHECK-HOOKS, *a Model of which have been placed in the Society's Repository.*

THE contrivance here described formed part of an apparatus for the prevention of accidents in raising men or minerals out of mines by means of a rope and bucket. The idea of centrifugal check-hooks appearing to be new and applicable in other machines for the purpose of stopping them when put into inordinate motion, or *running wild* as the phrase is, the Society directed that this particular contrivance should be inserted in their printed Transactions.

Fig. 1, Plate X, is a front view, and fig. 2 is a side view of the apparatus; *a a* a bar fixed on the end of the axis *d*, fig.